

CLAIMS

What is claimed is:

1 1. A thermal image generation device comprising:
2 a casing forming an interior cavity, one surface of
3 the casing including a screen;
4 a thermochromic material attached to the screen; and
5 at least one thermal transfer element movable over
6 regions of the thermochromic material to alter a
7 temperature at the regions from a steady-state, ambient
8 temperature which temporarily causes a color variation of
9 the thermochromic material until the regions of the
10 thermochromic material return to the ambient temperature.

1 2. The thermal image generation device of claim 1
2 further comprising:
3 a driving circuit to adjust at least one of voltage
4 and current for controlling activation and deactivation of
5 the at least one thermal transfer element; and
6 mechanical logic to control placement of the at least
7 one thermal transfer element bounded by a perimeter formed
8 by the thermochromic material.

1 3. The thermal image generation device of claim 2,
2 wherein the at least one thermal transfer element is a
3 resistor.

1 4. The thermal image generation device of claim 2,
2 wherein the mechanical logic is a roller assembly
3 controlling placement.

1 5. The thermal image generation device of claim 4,
2 wherein the at least one thermal transfer element is an
3 array of thermal elements having a fixed X-axis placement
4 and a varying Y-axis placement controlled by the roller
5 assembly.

1 6. The thermal image generation device of claim 1,
2 wherein the at least one thermal transfer element is a
3 combination of filters and lenses to produce a light beam.

1 7. The thermal image generation device of claim 2
2 further comprising
3 a processor coupled to the driver circuit and the
4 mechanical logic; and
5 a sensor coupled to the processor, the sensor to
6 monitor a temperature of the at least one thermal transfer
7 element and to feedback data to the processor to enable
8 the processor to control the driving circuit and the
9 mechanical logic.

1 8. A thermal image generation device comprising:

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2 a casing forming an interior cavity, one surface of
3 the casing including a component embedded with
4 thermochromic material; and

5 logic placed within the interior cavity, the logic
6 including a thermal transfer element movable over regions
7 of the component to alter a temperature at the regions
8 from a steady-state, ambient temperature which temporarily
9 causes a color variation of the thermochromic material
10 until the regions of the thermochromic material return to
11 the ambient temperature.

1 9. The thermal image generation device of claim 8,
2 wherein the component is a screen.

1 10. The thermal image generation device of claim 8,
2 wherein the component is a button on a toy product.

1 11. The thermal image generation device of claim 8,
2 wherein the logic further comprises
3 a driving circuit to adjust at least one of voltage
4 and current for controlling activation and deactivation of
5 the thermal transfer element; and
6 mechanical logic to control placement of the thermal
7 transfer element bounded by a perimeter formed by borders
8 of the component.

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1 12. The thermal image generation device of claim 11,
2 wherein the thermal transfer element of the logic is a
3 resistor.

1 13. The thermal image generation device of claim 11,
2 wherein the mechanical logic is a roller assembly.

1 14. The thermal image generation device of claim 13,
2 wherein the thermal transfer element of the logic is an
3 array of thermal elements having a fixed X-axis placement
4 and a varying Y-axis placement controlled by the roller
5 assembly.

1 15. The thermal image generation device of claim 11,
2 wherein the logic further comprises
3 a processor coupled to the driver circuit and the
4 mechanical logic; and

5 a sensor coupled to the processor, the sensor to
6 monitor a temperature of the thermal transfer element and
7 to feedback data to the processor to enable the processor
8 to control the driving circuit and the mechanical logic.

1 16. A method comprising:
2 activating at least one thermal transfer element in
3 response to a condition;

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4 monitoring a region of a thermochromic material in
5 close proximity to the at least one thermal transfer
6 element in order to (i) determine if a temperature at the
7 region varies from an ambient temperature by a selected
8 temperature difference, causing the thermochromic material
9 to experience a color variation, and (ii) determine if the
10 temperature at the region exceeds a maximum temperature;
11 and
12 deactivating the at least one thermal transfer
13 element if the temperature at the region exceeds the
14 maximum temperature.

1 17. The method of claim 16, wherein the monitoring
2 of the region of the thermochromic material further
3 includes determining if the temperature at the region
4 falls below a minimum temperature.

1 18. The method of claim 17 further comprising:
2 deactivating the at least one thermal transfer
3 element if the temperature at the region falls below the
4 minimum temperature.

1 19. The method of claim 16, wherein the condition is
2 a depression of a button of a product including the
3 thermochromic material.

- 1 20. The method of claim 16, wherein the
2 thermochromic material is a film placed over a screen of a
3 writing tablet.

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